

Claims

- 1- An additive for improving impact resistance, said additive comprised of
- (A) a core/shell additive comprised of core based on alkyl acrylate, on a polyorganosiloxane rubber or a blend thereof and a shell based on poly(alkyl methacrylate), or on a styrene-acrylonitrile copolymer, characterized in that the said core/shell additive comprises from:
- (a) 70% to 90% by weight ,of an elastomeric crosslinked core which is comprised of:
- 1) of 20% to 100% by weight, of a nucleus composed of a copolymer (I) of n-alkyl acrylate, the alkyl group of which has a carbon number ranging from 5 to 12, and preferably ranging from 5 to 8, or of a mixture of alkyl acrylates, the linear or branched alkyl group of which has a carbon number ranging from 2 to 12, or of a polyorganosiloxane rubber, of a polyfunctional crosslinking agent possessing unsaturated groups in its molecule, at least one of which is of $\text{CH}_2=\text{C}$ < vinyl type, and optionally of a polyfunctional grafting agent possessing unsaturated groups in its molecule, at least one of which is of $\text{CH}_2=\text{CH}-\text{CH}_2$ -- allyl type, the said nucleus containing a molar amount of crosslinking agent and optionally of grafting agent ranging from 0.05% to 5% and preferably an amount of between 0.5% and 1.5%;
- 2) of 80% to 0% by weight of a covering composed of a copolymer (II) of n-alkyl acrylate, the alkyl group of which has a carbon number ranging from 4 to 12, or of a mixture of alkyl acrylates as defined above in 1) and of a polyfunctional grafting agent possessing unsaturated groups in its molecule, at least one of which is of $\text{CH}_2=\text{CH}-\text{CH}_2$ -- allyl type, the said covering containing a molar amount of grafting agent ranging from 0.05% to 2.5%;
- (b) 30% to 10% by weight, of a shell grafted onto the said core composed of a polymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, or alternatively of a statistical copolymer of an

alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, and of an alkyl acrylate, the alkyl group of which has a carbon number ranging from 1 to 8, containing a molar amount of alkyl acrylate ranging from 5% to 40%, or alternatively composed of a styrene-acrylonitrile copolymer having a preferred styrene:acrylonitrile molar ratio between 1:1 and 4:1, and particularly between 7:3 and 3:1, respectively; wherein optionally 0.1 to 50 weight percent of vinyl monomers have functional groups; and

(B) a linear terpolymer of (a) ethylene, (b) a lower alkylacrylate and (c) a monomer which contains a heterocycle containing one oxygen atom as the hetero-atom.

2. An additive for improving impact resistance, said additive comprising a blend of :

(A) 80 – 20% by weight of a core/shell additive comprised of

(1) 70-90% by weight of a cross linked elastomeric core compound of

a) 20-100% by weight of a nucleus comprising a copolymer of n-octyl acrylate and 1,4-butanediol diacrylate, and

b) surrounding said nucleus, 80-0% by weight of a covering comprising a copolymer of n-octyl acrylate and diallyl maleate, and

(2) surrounding said core, 30-10% by weight of a shell grafted on to the said core, said shell composed of a polymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, or alternatively of a statistical copolymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, and of an alkyl acrylate, the alkyl group of which has a carbon number ranging from 1 to 8, containing a molar amount of alkyl acrylate ranging from 5% to 40%, or alternatively composed of a styrene-acrylonitrile copolymer.

(B) 20 to 80 weight percent of a linear copolymer which contains from 50 to 85 parts of units derived from ethylene, from 5 to 40 parts of units derived from a C1 - C8 ester of (meth)acrylic acid, and from 2 to 10 parts of a copolymerizable monomer containing an epoxy group.

3. An additive according to claim 2, wherein said nucleus is about 90% by weight of said core and, said covering is about 10% by weight.

4. An additive according to claim 3, wherein said shell consists essentially of poly(methyl methacrylate).
5. An impact resistance additive according to claim 2, wherein said core/shell comprises from:
- a) 75% to 85% of said crosslinked elastomeric core,
 - b) 25% to 15% of said shell grafted onto the said core.
6. An impact additive according to claim 2, wherein the covering of the crosslinked core has a molar amount of grafting agent of between 0.5% and 1.5%.
7. An impact additive according to claim 2, characterized in that the alkyl methacrylate used to form the shell is methyl methacrylate.
8. An impact additive according to claim 1 wherein the C1 - C8 ester of (meth)acrylic acid of the linear copolymer is methyl acrylate.
9. An impact additive according to claim 1 wherein the copolymerizable monomer containing an epoxy group of the linear copolymer is glycidyl methacrylate.
10. An impact modifier of Claim 2 , wherein the terpolymer is comprised of 55-75 parts of units derived from ethylene, 20-30 parts of units is derived from a lower alkyl acrylate, and 5-15 parts of units is derived from glycidyl methacrylate.
11. A thermoplastic polymer composition containing impact additive of claim 1wherein the amount of additive incorporated in the thermoplastic polymer is between 1 and 50 parts by weight per 100 parts by weight of the thermoplastic polymer of the composition..